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Twenty-third Annual Report

OF THE

Agricultural Experiment  
Stations

OF THE

Louisiana State University and Ag-  
ricultural and Mechanical

College *to the governor*

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FOR/1910

*Louisiana Agricultural Experiment Station*

TO THE GOVERNOR

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BY W. R. DODSON, DIRECTOR

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Ramires & Jones,  
Baton Rouge, Louisiana.  
1911



# Louisiana State University and A. & M. College.

## Louisiana State Board of Agriculture and Immigration

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### STATION STAFF.

W. R. DODSON, A. B., B. S., Director, Baton Rouge.  
HAMILTON P. AGEE, B. S., Assistant Director, Audubon Park, New Orleans.  
S. E. McCLENDON, B. S., Assistant Director, Calhoun.  
FRIEND C. QUEREAU, M. S., Assistant Director, Crowley.  
WM. L. OWEN, B. S., Bacteriologist, Audubon Park, New Orleans.  
W. G. TAGGART, B. S., Assistant Chemist, Audubon Park, New Orleans.  
J. K. McHUGH, Secretary and Stenographer, Audubon Park, New Orleans.  
J. E. HALLIGAN, B. S., Chemist, Baton Rouge.  
A. P. KERR, M. S., Assistant Chemist, Baton Rouge.  
R. G. FULLER, B. S., Assistant Chemist, Baton Rouge.  
R. BAUS, B. S., Assistant Chemist, Baton Rouge.  
R. G. TILLERY, M. S., Assistant Chemist, Baton Rouge.  
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P. H. DOHERTY, B. S., Assistant Chemist, Baton Rouge.  
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J. B. GARRETT, B. S., Entomologist, Baton Rouge.  
G. L. TIEBOUT, B. S., Horticulturist, Baton Rouge.  
W. H. DALRYMPLE, M. R. C. V. S., Veterinarian, Baton Rouge.  
C. W. EDGERTON, Ph. D., Plant Pathologist, Baton Rouge.  
E. W. KERR, M. E., Professor Mechanical Engineering, Baton Rouge.  
J. T. TANNER, B. A., Secretary and Stenographer, Baton Rouge.  
IVY WATSON, Farm Manager, Calhoun.  
E. J. WATSON, Horticulturist, Calhoun.  
WALTER McCLENDON, Farm Manager, Baton Rouge.  
V. L. ROY, B. S., in charge of Boys' Demonstration Work.

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Louisiana Agricultural Experiment  
Station.

Annual report of the agricultural  
experiment stations of the  
Louisiana State University and  
Agricultural and Mechanical College  
to the Governor for /

LOUISIANA STATE UNIVERSITY  
AND AGRICULTURAL & MECHANICAL COLLEGE.

OFFICE OF EXPERIMENT STATIONS,  
BATON ROUGE, LA., February 1, 1911.

*To His Excellency, Jared Y. Sanders,  
Governor of Louisiana:*

SIR—In compliance with the provisions of an act of the National Congress of March 2, 1887, commonly known as the Hatch Act, and of March 16, 1906, known as the Adams Act, providing for federal appropriations for agricultural experiment stations of the several states, I submit herewith a report of work done by the stations during the year 1910, and a financial statement for the government fiscal year, July 1, 1909, to July 1, 1910.

While the receipts and expenditures of the various funds received from the State of Louisiana have been published twice annually, June 1 and December 1, as provided by state law, I have combined these two reports and submit them along with the statement of federal funds, so as to show the total receipts and expenditures for twelve months.

Respectfully,  
W. R. DODSON,  
*Dean and Director.*

## Station No. 1, Sugar Experiment Station, Audubon Park, New Orleans.

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Mr. H. P. Agee, Assistant Director, has had immediate charge of the work again during the past year and has discharged his duties faithfully.

### FIELD EXPERIMENTS.

The field experiments have been very largely a continuation of those previously reported, most of them requiring a long series of results before conclusions can be drawn. The more important phases of the work are briefly discussed under appropriate headings.

#### *Sugar cane seedlings.*

We have continued the work of securing seedling canes of our own germination and also have imported seedlings that have been secured in tropical countries. The large number of seedlings secured by us in 1909 have been tried in the field and normal crops have been secured, in which polarization tests could be made of the sugar content. From the many hundreds few have been selected that present desirable characters for the field and also show up well in the laboratory. Several years of seedling propagation at the Station have clearly demonstrated that the characteristics of seedlings do not become firmly established until they have been propagated a number of years. Therefore, the work with many hundred canes entails a great deal of laboratory analyses, field notes, and extensive records. However, we have a number of canes that show an unusually high sucrose content for Louisiana and we feel very much encouraged from the outlook of this work.

#### *Importation of foreign varieties.*

During the past year we have imported new varieties of cane from foreign countries, taking all precautions to avoid the possibility of the introduction of foreign insects or fungus diseases of the sugar cane. So that we now have a very large collection of varieties of cane under observation.

*Field work.*

Field experiments have been continued mainly along lines previously outlined, covering questions of fertilization, methods of cultivation, rotation experiments, winter cover crops, etc., also covering spring versus fall planting of the different varieties and under different conditions.

*Miscellaneous crops.*

We have continued to give some attention to miscellaneous crops, including fiber plants, truck crops, fruits, forage crops and some medicinal plants.

*Cane harvesters.*

During the past year we have again devoted some of our plots to cane on which cane harvesters could be tried, and several inventors have spent a portion of the summer on the Station grounds perfecting machines for harvesting sugar cane. Much progress in this line has been made during the past year, and it really looks now as though we may in the near future satisfactorily harvest cane and strip the leaves from it at a material saving in cost.

*Planters' meeting at the Station.*

The June meeting of the Louisiana Sugar Planters' Association was held on the Station grounds and was the most largely attended meeting yet held. Numerous demonstrations were given in the use of implements for sugar plantations; addresses were delivered, and refreshments were served. These annual meetings at the Station have met with the very hearty endorsement of the sugar planters throughout the state.

*Audubon Sugar School.*

The fourth year men at the Audubon Sugar School of the Louisiana State University spent the grinding season in the sugar house of the Experiment Station. These students were under the supervision and instruction of the members of the University faculty during the entire season and excellent work has been done by them.

*The sugar house.*

The sugar house has been extensively repaired during the past year. New boilers and a new engine have been installed

and other repairs made, at an expense of approximately \$3,000. The buildings were also repaired and re-enforced but additional repairs are yet necessary to put everything in prime condition. The sugar house has been used several times during the year by inventors for experiments and demonstrations with machinery designed to improve sugar house operations. The experiments conducted in the sugar house during the grinding season have been largely directed toward methods of clarification, which matter will be referred to again under the heading chemical work of the Station.

### *Co-operative work.*

The United States Department of Agriculture offered to carry on investigations on insects injurious to sugar cane, in co-operation with the Louisiana Station and we have made arrangements with the Bureau of Entomology by which we are to furnish office and laboratory space in one of the buildings at Audubon Park for their representatives to carry on these investigations, and most of the entomological investigations that we had under way that affect sugar interests have been turned over to the federal bureau. Mr. D. L. Van Dine had charge of this work during the greater portion of the year and was assisted by Mr. T. C. Barber. Toward the close of the year Mr. Van Dine was elected entomologist of the Experiment Station of Porto Rico, and Mr. T. C. Barber has been placed in charge of the work, and Mr. A. Cushman has been assigned as assistant to Mr. Barber. They have been carrying on experiments with the sugar cane beetle, the mealy bug and cane borer. It is hoped that the results there will be a material addition to our knoweldge of measures to control these pests.

### CHEMICAL DEPARTMENT.

The chemical department has given primary attention to research work as provided under the Adams Act of the national government, along the lines outlined to and approved by the National Department of Agriculture. These investigations embrace a study of the constituents of sugar cane under various field conditions and a study of the composition of the sugar house products. During a portion of the year we had only one man on this work, Mr. W. G. Taggart, Dr. Yoder having re-

signed early in the year and Dr. W. E. Cross having assumed the position of Chief Chemist in September, 1910. This work has resulted in taking up certain questions of clarification where it seemed that improvement could be made in sugar house practice. It has been found that the application of the carbonation process previously presenting seemingly unsurmountable difficulties, as applied to the cane juice, may be utilized with the proper control of temperature and some other factors. Laboratory experiments under careful control gave excellent results. Although these details were worked out late in the season, two small runs were made in the sugar house, where these laboratory results as tested gave very excellent results, and we believe that with another year for perfecting minor defects the method can be made thoroughly practicable in Louisiana sugar houses.

During the early part of the year some work was done on the use of formaldehyde in sugar house cane juices and also on the composition of certain organic acids in cane juices. The result of the study of formaldehyde has been published.

#### DEPARTMENT OF BACTERIOLOGY.

The bacteriological studies have been continued along lines indicated in last year's report, by Mr. W. L. Owen. The results of these investigations have been embodied into bulletin form and are now in press. It may be said here that Mr. Owen has demonstrated very conclusively that living microscopic organisms in raw sugars bring about a destruction of a certain amount of sucrose and the formation of a chemical substance that is optically active, thus producing errors in polarization. This substance has heretofore been unknown and it has consequently given rise to a certain amount of error in ordinary analytical work. This discovery will therefore be of exceedingly great value in contributing to greater scientific accuracy in the polarization of sugars. This work will be continued during the coming year with the expectation of getting additional data. It is also proposed to take up a study of bacterial flora of cane syrup, with the view of determining conditions that modify this flora and the influence these organisms may have on methods of treatment for the preservation of syrup; also other influence on the quality of syrup.



## Station No. 2, State Station, Louisiana State University, Baton Rouge.

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The office of the Director is maintained on the campus of the Louisiana State University. All bulletins are issued from this Station and the laboratory for the analysis of fertilizers, feed stuffs and Paris green for the State Board of Agriculture and Immigration is also located here. The work of the several different departments is herein briefly summarized.

### FARM DEPARTMENT.

On the first of February, 1910, Mr. S. E. McClendon, who had acted as Assistant Director for a number of years, was transferred to the North Louisiana Experiment Station at Calhoun, and the Director took up his residence on the Experiment Station Farm. The work of the Assistant Director has been assigned to other parties.

#### *Field work.*

The field work, covering experiments in the use of fertilizers, rotation crops, forage crops, fiber crops, miscellaneous and medicinal plants, has been continued along lines outlined in previous reports.

#### *Corn.*

In addition to conducting experiments previously outlined on corn we took up a study of the influence of suckering corn stalks and the "ear to the row" tests of seed and the selection and improvement of certain strains of seed corn. This work will also be continued for a number of years before any conclusions are announced.

#### *Root crops.*

The utilization of root crops was considerably enlarged and extended during the past year with very excellent results in feeding stock beets to dairy cattle and to hogs and in the utilization of rutabagas and sweet potatoes for fattening swine. Very large yields of stock beets and sweet potatoes have been secured,

when following oats the past year when fed to hogs gave as large a return per acre in pounds of pork as could have been secured from feeding seventy-five bushels of corn. Bulletins have been published during the year giving the results in detail.

### *Fiber crops.*

In 1909 we planted a much larger area of ramie than we had previously cultivated, because we had a number of applications for material on which to test machines for decorticating the fiber. Again these machines have failed to meet expectations and we have plowed up the greater portion of our ramie plots, though we shall not abandon the hope that some one will invent a machine that will successfully prepare the ramie plant for the market.

### *Forage crops.*

The results of the past year have emphasized the desirability of greatly extending forage crop production in the state, and especially have the results of the past year verified the possibilities of the production of pork on forage crops at very small cost. The rather large list of forage crops that will grow in the winter time should give us a decided advantage in the production of hogs, cattle and sheep over the more northern latitudes where nothing is grown during the winter time.

## DAIRY FARM.

A farm of eighty-seven acres southeast of Baton Rouge, belonging to the Agricultural College, which had been leased out for a number of years, has been transformed during the past year into a dairy farm, to be operated in conjunction with the dairy on the University grounds. The land had been very poorly cared for and was in very bad condition, but it is rapidly being transformed into a productive field and will be gradually developed into a demonstration dairy farm under the direction of the officers of the Experiment Station.

## EXPERIMENT STATION DAIRY.

The Dairy has been under the immediate charge of Mr. C. H. Staples, a senior student of the College of Agriculture. The Dairy has been enlarged by the addition of several very valua-

ble cows. A concrete silo was erected during the latter part of the summer at a cost of approximately \$250. Additional machinery for grinding grain and hay was installed during the latter part of the year. The milk room has also been improved and additional equipment added. The increase of the herd has been cared for and we now have about as many young stock as we have cows in the dairy, and within a year and a half the number of animals producing milk will be approximately double that of the present number. Considerable improvement has also been made in the fences, gates and sheds in connection with the dairy buildings.

#### ENTOMOLOGICAL DEPARTMENT.

Upon the resignation of Mr. Wilmon Newell, formerly Entomologist of the Station and Secretary of the State Crop Pest Commission, Mr. J. B. Garrett, Assistant Director of the North Louisiana Experiment Station at Calhoun, was appointed to this position and took up his duties the first of January. The Legislature of 1910 established the State Livestock Sanitary Board and gave to this Board charge of the tick eradication work, formerly conducted by the Crop Pest Commission. The entomological investigations of the Crop Pest Commission were transferred to the Experiment Station, as was also all property belonging to the Commission. The work of the inspection of nurseries and the execution of police regulations for the prevention of the introduction of injurious insects and fungous diseases was given to the State Board of Agriculture. The work has thus been distributed so as to practically give the investigations to the Experiment Stations, the police power to the State Board of Agriculture and the tick eradication work to the Livestock Sanitary Board. This seems to be a much more effective plan of operation than that previously existing.

#### HORTICULTURAL DEPARTMENT.

Mr. George L. Tiebout has continued in charge of the work of this department and has faithfully and efficiently discharged every responsibility. During the summer arrangements were made by which Mr. Tiebout could give all his time to the Experiment Station work, and the work of teaching previously done by him was cared for by the addition of another member to

the faculty of the University. A demonstration garden has been established for the primary purpose of producing vegetables for the University mess hall, and Mr. Tiebout will have charge of this work as well as the experimental work of the Station. A modern pumping plant has been installed and provision made for irrigating crops during the coming year. It is planned to produce all the vegetables that will be consumed by the students in the University mess hall and have some to ship to northern markets. The experimental work has continued along lines previously outlined. Greenhouse cucumbers were shipped to the northern markets during late winter and very early spring. The results of investigations in shipping to northern markets numerous vegetables, especially suited to the bluff soils of the state have given very satisfactory results. The citranges gave quite a large crop of fruit this year and we were able to test their merits on a much larger scale than previously. It seems that some of these fruits will have a commercial value. Experiments in the introduction of vegetable pears have been only partially successful, as the early frost greatly reduced the crop of these vegetables. We have not yet been able to overcome the diseases that prey upon the globe artichoke, although some progress has been made in this line during the past year.

#### DEPARTMENT OF VETERINARY SCIENCE AND ANIMAL PATHOLOGY.

Dr. W. H. Dalrymple has had a very large part of his time taken up in correspondence, in consultations and aiding in the establishing of the hog cholera serum plant and serving as a member of the Livestock Sanitary Board, particularly giving attention to the work of the eradication of the Texas fever cattle tick, and various other duties that have been performed by him. However, with his multitude of duties he found time to write Bulletin 115, on our available stock feeds, and Bulletin 122, giving the results of some of his experiments in feeding ground rice to mules, and Part I of Bulletin 124 on hogs. The pathological work conducted by Dr. Paulsen was interrupted by his resignation in October. Up to that time he had continued his investigations in the hyperimmunization of sheep against anthrax, and in securing data on the conditions that minimize the influence of the protective effect of anthrax vaccine. It is

greatly to be regretted that Dr. Paulsen should give this work up to take up the practice of human medicine. Dr. Harry Morris, a graduate of the Veterinary Department of the University of Ohio, has been elected to succeed Dr. Paulsen, and we believe that he will ably carry the work forward. There has been no outbreak of cerebro spinal meningitis during the past year, so we have had no opportunity for extending our study on this subject.

#### DEPARTMENT OF PLANT PATHOLOGY.

Dr. C. W. Edgerton has been able to continue the prosecution of his investigations without interruption for another year. The work on bean anthracnose was completed and the results published in Bulletin No. 119. Some further work along this line will be conducted in 1911, but mainly for the purpose of giving demonstrations of the effectiveness of methods worked out and published in Bulletin 119. Work on the cotton boll rots has been continued and considerable valuable data added to that already on record. Fig diseases have been studied and some valuable and definite conclusions reached, which have been published in scientific journals. More attention has been given to sugar cane diseases than to any other one topic during the past year. It seems that these diseases have been rapidly spreading in the state and are of increasing importance. The results of some of this work have been published in Bulletin No. 120. The alfalfa diseases have continued to receive attention. The cause of the stem girdle has been definitely determined as due to an insect which girdles the stem and a fungus enters the tissue at this point. The fungus has been proven to be the same as the one that causes "sore shin" of cotton and the "damping off" of some other plants. Cotton seed poisoning of animals has received some attention in co-operation with the Department of Animal Pathology, and plans have been formed for enlarging the work the coming year, in the hope of securing some valuable data on this very important subject.

#### DEPARTMENT OF MECHANICAL ENGINEERING.

Professor E. W. Kerr has continued his investigations on bagasse fuel without interruption. A device for drying bagasse was constructed at Palo Alto plantation during the past sum-

mer at a cost of something more than a thousand dollars. In this work we have had the very cordial and financial support of the Lemann Company of Donaldsonville, who have furnished a boiler and sugar house equipment for these investigations. The results of the work are now being tabulated for publication in bulletin form. The result of these investigations will undoubtedly end in much greater economy in the utilization of bagasse as a source of fuel in the sugar houses of Louisiana.

#### CORN CLUBS AND AGRICULTURAL SCHOOLS.

During one-half the year the Experiment Stations paid one-third of the salary and traveling expenses of Professor V. L. Roy in his work of organizing corn clubs and assisting in the inauguration of agricultural work in the agricultural high schools of the state. We also furnished office room and facilities for Professor Roy for the entire year. The Legislature of 1910, however, made provision for the establishment of an Extension Department of the University, and Professor Roy was transferred to that department.

#### EXHIBIT AT THE STATE FAIR.

The Experiment Stations again made an exhibit at the State Fair at Shreveport. The exhibit consisted of enlarged photographs of crops, animals, buildings, equipment of the Experiment Stations, diagrams and specimens of plants, showing results of experiments, particularly in the production of corn, forage crops, feeding experiments, etc. Also graphic illustrations of the amount of fertility removed from the soil by different farm crops, the amount of fertilizer required to restore these ingredients; and many other phases of experiment station work were illustrated. These exhibits attracted much attention from farmers, and are no doubt of great value in stimulating interest in progressive agriculture.

#### LABORATORY FOR FEED STUFFS, FERTILIZERS AND PARIS GREEN.

The work of this department has continued in the immediate charge of Mr. J. E. Halligan, assisted by six chemists the greater part of the time. There has been improvement in the fertilizers and feed stuffs put on the markets of the state, indi-

cated by the decreased number of samples that failed to be as good as the guarantee. There has been a considerable decrease in the amount of mixed feed stuffs consumed in the state, partly due to the large corn crop raised the previous year, and partly due to the fact that we have continuously urged the people to grow their feed at home. The effect of the boll weevil on the cotton crop has also aided in bringing about the home production of our supply of feed stuffs. Very few samples of Paris green have been analyzed, as there has been no considerable amount of Paris green used, either for fighting the cotton caterpillar or the boll weevil. Twenty-two hundred and ninety-six analyses of fertilizers were made during the fiscal year, covering 5999 samples; and 4422 analyses of feed stuffs, covering 9381 samples. During the latter part of the year we constructed a fire-proof hood adjoining the main laboratory, thus eliminating the very great danger of fire that has constantly menaced us heretofore. The capacity is such as to also increase the amount of work that may be accomplished in a given time in the laboratory. We have been very fortunate in maintaining a corps of chemists of high efficiency and exceptional devotion to their work. In every instance arising in which there has been a dispute over the result of analyses referees have verified the result secured in the laboratory.

Changes in staff: Mr. H. L. Green resigned to take up the study of medicine and was succeeded by Mr. G. D. Cain. Mr. R. E. Graham resigned as assistant chemist at Audubon Park to take up the study of medicine.

#### SPECIAL DEMONSTRATION TRAIN.

From the second to the fourteenth of October, 1910, some of the members of the Experiment Station staff and of the University faculty, in co-operation with the Southern Pacific Railway Company, operated a special train over the Southern Pacific lines, in an effort to stimulate greater interest in diversified farming and stock raising. The train carried two carloads of improved agricultural implements, a carload of cattle, representing two breeds of beef type, the dual purpose cow, and the dairy cow. Examples of the leading breeds of hogs were carried in another car provided especially for exhibition purposes. One passenger coach was transformed into a general exhibit

car, in which were displayed samples of a great variety of farm crops, fruits, vegetables, fiber crops, etc., that were grown in the state, mostly at the Experiment Stations. In addition to operating the train, the Southern Pacific Company provided a dining car and standard sleeper for those assisting in the operation of the train and delivering lectures. The train traversed a little over a thousand miles of territory and meetings were held at forty-one places, with a total attendance of approximately 55,000 people. So far as we have the records, this is the most successful farmers' demonstration train yet operated in the United States, and the first to be operated in Louisiana in which exhibit material was adequately provided.

### PARISH FAIRS.

At a considerable number of parish fairs members of the Experiment Station staff acted as special judges of livestock and agricultural exhibits. The demand for judges trained in special lines of agriculture is fortunately becoming more and more pronounced, which is of itself an indication of the growth and improvement in the character of parish fairs.

### EXCURSIONS TO THE EXPERIMENT STATIONS.

In June, 1910, the Boys' Corn Clubs of Avoyelles Parish came in a special train to Baton Rouge to visit the Experiment Station and University. About 600 boys and men visited the Experiment Station and went over the plots upon that occasion. It is to be hoped that this kind of interest in Experiment Station work will be encouraged in every way possible.

Also, in June, 1910, the Frisco Railroad ran a special train from Baton Rouge to the Rice Experiment Station at Crowley, and a very large number of the members of the Legislature, including the Governor and Lieutenant Governor and other state officials, made the trip and went over the grounds of the new Rice Station. The visitors were most cordially received and dined by the citizens of Crowley, who, as it will be remembered, contributed very liberally to the founding of the Rice Station.

### FARMERS' INSTITUTES.

The members of the Station staff have been called upon more extensively than ever before for special addresses at



farmers' meetings, and for assisting in the organization of various clubs and societies for promoting special interests, and yet we have not been able to meet all the demands for this kind of work.

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## Station No. 3, North La. Experiment Station, Calhoun.

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On the first of February, 1910, Mr. J. B. Garrett, Assistant Director, was elected Secretary of the Crop Pest Commission, as previously referred to, and Mr. S. E. McClendon, Assistant Director at Baton Rouge, was transferred to Calhoun and has been in charge of the work there throughout the remainder of the year. All things considered we have had a favorable season at Calhoun, and the crops have been generally satisfactory, although the fall was very dry and fall crops have not been up to the standard. While the early freeze did considerable damage to farm crops, the replanting was followed by favorable seasons. Most of the experiments conducted there were a continuation of those previously outlined, and requiring observations over an extended period. They embraced rotation experiments, experiments in varieties and fertilizer requirements, particularly of cotton and corn. Experiments in the way of planting soy beans at different seasons throughout the year and testing their adaptability to that soil and climate have been continued, as have also tests of varieties of oats, clovers and other forage crops. The experiments in the influence of fertilizers on the quality of syrup made from sugar cane have been along the same general line as conducted for the past two or three years. The fertilizer experiments with Spanish peanuts have been enlarged and extended. The grazing experiments, in which hogs have been grazed on succession crops, particularly soy beans, peanuts, cowpeas and sweet potatoes, have given very excellent results, showing that pork can be produced on these crops at very low cost. Experiments in the addition of stable manure under varying conditions have also been continued.

*Horticultural work.*

Mr. E. J. Watson has continued in charge of the horticultural work of this Station, with very gratifying results secured the past season. We had a very large crop of peaches and a most excellent crop of grapes for the number of vines cultivated. In fact the crop of grapes of some of the varieties would have been a credit to any of the states where grape culture is well established. Mr. Watson is doing some excellent work along the line of breeding in cantaloupes, beans and water-melons. He is also comparing the different methods of cultivating orchards, experimenting in the use of winter cover crops for orchards, etc. Good progress is being made along all these lines.

*Beef cattle.*

The herd of ten high-grade Polled Angus heifers, placed on the Station as per previous report, have prospered, and the Station now has the first generation of offspring from these cattle. The experience of the past season has fully demonstrated the value of Bermuda as a grazing crop on the hill soils of North Louisiana.

*Sheep.*

The flock of grade Southdown sheep has done well during the past year and confirms results previously secured in the production of early lambs of good quality, and will no doubt lend encouragement to the development of the sheep industry in this state.

It is very much to be regretted that Mr. T. I. Watson, for many years Farm Manager of the North Louisiana Station, has tendered his resignation, effective February 1, 1911. Mr. Watson has served the Station long and well. He has been exceptionally faithful to every duty. He will be succeeded by Mr. J. E. Bryan.

*North Louisiana Agricultural Society.*

This organization has continued to hold its meetings at the Experiment Station. The meetings have been well attended and a great deal of good has been accomplished.

*Agricultural Fair.*

The annual fair held under the auspices of the North Louisiana Agricultural Society was again held at the Experiment Station and was the best fair that has yet been held. This fair is unique in that no admission fees are charged, the premiums being secured through subscriptions by the citizens of Ouachita Parish and the adjoining territory and firms who have commercial interests in that section of the State. The agricultural discussions held in connection with the fair are always productive of a great deal of good.

All of the members of the staff of this Station have participated in farmers' institutes and public meetings, in which agricultural topics were discussed.

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## Station No. 4, Rice Experiment Station, Crowley.

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The work of this Station has been in charge of Mr. F. C. Quereau, who has rendered excellent service in inaugurating the work there. The plots have been very carefully laid out and a series of elaborate experiments started. They embrace questions of fertilization, irrigation, crop rotation and allied subjects. The United States Department of Agriculture is working in co-operation with us and has enlarged its field of work in rice, giving special attention to a study of a very large number of varieties and to the fungus diseases and insect enemies of the rice crop. Very careful observations are being made and records kept of the temperature, rainfall, amount of evaporation and wind currents. This data will be very valuable for future reference.

A sixty horse-power double cylinder gasoline engine was installed in the early part of the year and has solved for us the irrigation problem at the Experiment Station. The deep well with this available power gives us the greatest abundance of water for irrigating the entire sixty acres of the Station, if it were necessary.

The foundation for a new barn for implements, grain and

livestock has been laid and during the early part of the coming year the superstructure will be erected.

In June, 1910, the State Legislature provided for the financial support of the Rice Experiment Station, appropriating \$7500 each year for two years.

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### PUBLICATIONS ISSUED DURING 1910.

Twenty-second Annual Report.

Bulletin 119, Bean Anthracnose.

Bulletin 120, Some Sugar Cane Diseases.

Bulletin 121, The Sugar-Cane Mealy-Bug.

Bulletin 122, Rough Rice as Feed for Horses and Mules.

Bulletin 123, Some Grazing and Soiling Experiments.

Bulletin 124, Part I: Breeds of Hogs;

Part II: The Best Crops to Grow for Hogs,  
and Other Data.

Report of Analyses of Commercial Fertilizers for Season  
1909-1910.

Report of Analyses of Commercial Feed Stuffs for Season  
1909-1910.

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The following is a list of scientific articles published by members of the Station staff during the year in scientific journals and magazines. Most of these articles are of a technical nature and this means of publication was considered advisable. In addition to these articles numerous popular articles based on experiments and observations at the Experiment Stations and elsewhere have been prepared for agricultural papers, special editions of weekly and daily papers. These articles have been too numerous to list in this publication.

*Colletotrichum falcatum in the United States.*

By C. W. Edgerton (Science, n. s. XXXI, pp. 717, 718).

*The Diseases of Sugar Cane.*

By C. W. Edgerton (Louisiana Planter, No. 44, pp. 484, 485; also, The Modern Sugar Planter, Vol. I, No. 4, pp. 9, 10).

*Trochila populorum.*

By C. W. Edgerton (Mycologia, No. 2, pp. 169-173).

*The Antiseptic Value of Sulphites as a Preservative of Cane Syrup.*

By W. L. Owen. Submitted to the Referee Board of Consulting Scientific Experts of the U. S. Department of Agriculture. (To be published.)

*Occurrence of Formaldehyde in Sugar House Products.*

By P. A. Yoder and W. G. Taggart (International Sugar Journal, Vol. XII, No. 137, 1910).

*Experiments on Clarification.*

By Dr. W. E. Cross (The Modern Sugar Planter, Vol. XLI, No. 15, 1911).

*Loss of Invert Sugar in the Carbonatation Process.*

By Dr. W. E. Cross (The Louisiana Planter, Vol. XLVI, No. 4, p. 55).

*Progress in the Propagation of Seedlings of Sugar Cane in Louisiana.*

By H. P. Agee (American Breeders Magazine, Vol. I., No. 4).

*Molasses and Sugar Methods.*

(Referee Report on Co-operative Work of the Association of Official Agricultural Chemists.) By Hamilton P. Agee. Proceedings of the A. O. A. C., 1910. Bureau of Chemistry, U. S. Department of Agriculture.

*German and Russian Official Methods for Raw Sugar Analysis.*

By Dr. W. E. Cross (The Louisiana Planter, Vol. XLVI, No. 6; The Modern Sugar Planter, Vol. XLI, No. 19).

*American Molasses Feeds; Their Manufacture and Composition.*

By J. E. Halligan (Journal of Industrial and Engineering Chemistry).

*A Direct Method for the Determination of Available Phosphoric Acid, American Fertilizer.*

By J. E. Halligan and W. G. Taggart.

*Theory and Therapy of Milk Fever, So-Called.*

By W. H. Dalrymple (American Veterinary Review, Vol. XXXVII, No. 3).

*An Experimental Study of the Performance of Fifteen Boiler Furnaces with Bagasse as Fuel; The Insulating Properties of Steam-Pipe Covering; and Power Required to Run Sugar House Machinery.*

By Professor E. W. Kerr (Modern Sugar Planter of New Orleans).

FINANCIAL STATEMENT.

(Receipts and disbursements of all funds.)

The following is a copy of the statement already rendered to the federal authorities, showing the receipts and expenditures of the Hatch Fund and the Adams Fund for the year ending June 30, 1910:

HATCH AND ADAMS FUNDS.

Dr.	Hatch Fund.	Adams Fund.
To receipts from the Treasurer of the United States, as per appropriations for fiscal year ended June 30, 1910, under acts of Congress, approved March 2, 1887 (Hatch Fund), and of March 16, 1906 (Adams Fund) .....		
Cr.	\$15,000.00	\$13,000.00
By—		
Salaries .....	\$13,689.85	\$9,677.34
Labor .....	336.80	334.29
Publications .....	304.70	.....
Postage and stationery .....	4.50	3.00
Freight and Express .....	3.18	12.25
Heat, light, water and power .....	.....	403.73
Chemical supplies .....	.....	560.52
Seeds, plants, and sundry supplies .....	66.47	46.51
Feeding stuffs .....	169.96	29.65
Library .....	.....	5.33
Tools, implements and machinery .....	69.67	38.78
Furniture and fixtures .....	.....	57.00
Scientific apparatus .....	.....	1,346.24
Live stock .....	27.50	8.95
Traveling expenses .....	.....	421.30
Contingent expenses .....	302.15	29.21
Buildings and land .....	25.22	25.90
Total .....	\$15,000.00	\$13,000.00

We, the undersigned members of the State Board of Agriculture and Immigration, to whom is entrusted the disbursement of the above funds, do hereby certify that we have examined the accounts of the Experiment Stations of the Louisiana State University and Agricultural and Mechanical College for the fiscal year ending June 30, 1910, and have found the above

classification to be correct, and the receipts for the time named are shown to be \$15,000 for the Hatch Fund, and \$13,000 for the Adams Fund, and the corresponding disbursements are \$15,000 for the Hatch Fund and \$13,000 for the Adams Fund, for all of which the proper vouchers are on file, and have been examined by us and found to be correct.

(Signed) CHAS. SCHULER,  
Commissioner of Agriculture and Immigration.

(Signed) HENRY L. FUQUA,  
Vice-President of the Board of Supervisors of the Louisiana State University and Agricultural and Mechanical College, and Ex-Officio Member of the State Board of Agriculture.

The following is a combined statement of the receipts and expenditures from December 1, 1909, to November 30, 1910, of funds other than those secured through federal appropriations, statements covering same having been reported to the State Auditor after the accounts and vouchers for the above period had been examined and found correct by Mr. Henry L. Fuqua, Vice-President of the Board of Supervisors of the Louisiana State University:

#### STATE FUND.

##### Dr.

Received from State Treasurer .....	\$16,041.65
Received from Commissioner of Agriculture .....	496.99
Received from University Treasurer .....	300.00
Received from sale of farm products, etc. ....	5,243.18
Transferred from fertilizer account .....	3,000.00
Credit, cash, Station No. 3, 6-11-10 .....	857.32—\$25,939.14

##### Cr.

Salaries .....	\$ 3,070.41
Labor .....	7,088.49
Publications .....	296.97
Postage and stationery .....	569.59
Freight and express .....	369.62
Heat, water, light, and power .....	519.61
Chemical supplies .....	54.20
Seeds, plants and sundry supplies .....	1,623.10
Fertilizers .....	360.04
Feeding stuffs .....	1,583.51
Library .....	137.91
Tools, implements and machinery .....	1,180.20
Furniture and fixtures .....	78.05
Scientific apparatus .....	24.30
Livestock .....	1,467.39
Traveling expenses .....	1,316.12
Contingent expenses .....	3,168.14
Building and repairs .....	2,551.38
Miscellaneous .....	277.63
Actual deficit .....	202.48—\$25,939.14

## FERTILIZER, FEED STUFF AND PARIS GREEN FUND.

## Dr.

Cash on hand, December 1, 1909 .....	\$ 416.15	
Received from J. G. Medlenka, account Rice Station, 3-17-10 .....	3,500.00	
Received from Commissioner of Agriculture.....	21,400.00	
Received from miscellaneous sources .....	358.81	
Deficit .....	2,189.89	—\$27,864.85

## Cr.

Salaries .....	\$ 9,413.39	
Labor .....	1,440.65	
Publications .....	1,302.30	
Postage and stationery .....	374.17	
Freight and express .....	358.13	
Heat, water, light and power .....	484.11	
Chemical supplies .....	1,252.81	
Seeds, plants, and sundry supplies .....	162.08	
Fertilizers .....	58.52	
Feeding stuffs .....	296.70	
Library .....	41.05	
Furniture and fixtures .....	1.50	
Tools, implements and machinery .....	2,625.00	
Live stock .....	1,200.00	
Traveling expenses .....	251.14	
Contingent expenses .....	700.67	
Building and repairs .....	4,862.63	
Scientific apparatus .....	40.00	
Transferred to the State Fund account.....	3,000.00	—\$27,864.85

The books and vouchers for all these accounts have been examined by an expert, who has made his report to Mr. Henry L. Fuqua, to whom the books are submitted for approval.

Very respectfully,

W. R. DODSON,

*Dean and Director.*



## Available Bulletins.

The following is a list of the available bulletins of the Experiment Stations, and requests for these publications should be addressed to the Baton Rouge Station:

- Bulletin No. 5—Sugar Making on a Small Scale.
- Bulletin No. 67—Broom Corn, How to Grow and Cure It.
- Bulletin No. 68—Home Grown vs. Purchased Seed.
- Bulletin No. 70—Cane Borer (*Diatroea Saccharalis*).
- Bulletin No. 71—Report of North Louisiana Experiment Station, 1901.
- Bulletin No. 73—Analyses of Commercial Fertilizers and Paris Green.
- Bulletin No. 75—Preservation of Cane Syrups, and Yeasts, Moulds, Bacteria and Enzymes.
- Bulletin No. 76—Analyses of Commercial Fertilizers and Paris Green.
- Bulletin No. 79—Results of Experiments with Nodule Diseases of the Intestines of Sheep.
- Bulletin No. 80—Analyses of Commercial Fertilizers and Paris Green.
- Bulletin No. 82—The Texas Fever Cattle Tick Situation, and the Eradication of the Tick by a Pasture Rotation System.
- Bulletin No. 83—Results of Further Experiments with Nodule Diseases of Sheep; Bare-Lot Method of Raising Lambs.
- Bulletin No. 84—Texas Fever.
- Bulletin No. 85—Black Leg.
- Bulletin No. 87—Analyses of Commercial Fertilizers and Paris Green.
- Bulletin No. 88—Commercial Feeding Stuffs.
- Bulletin No. 89—Nodule Diseases of Intestines of Sheep; Bare-Lot Method of Raising Lambs.
- Bulletin No. 91—Chemistry of Sugar Cane and Its Products in Louisiana.
- Bulletin No. 93—Second Report on the Horseflies of Louisiana.
- Bulletin No. 94—Effects on the Human System of Louisiana Manufactured Syrups and Molasses.
- Bulletin No. 95—Diseases of Lambs and Sheep; Bare-Lot vs. Grass Lot.

- Bulletin No. 96—Cotton Wilt.
- Bulletin No. 97—Analyses of Commercial Fertilizers and Paris Green.
- Bulletin No. 98—Commercial Feeding Stuffs.
- Bulletin No. 99—Japanese Persimmons.
- Bulletin No. 100—The Root Diseases of Sugar Cane.
- Bulletin No. 101—The Diseases of Pepper and Beans.
- Bulletin No. 102—Dairy Herds and Their Milk Production, Hammond, La.
- Bulletin No. 103—Sulphur and Its Combinations in the Sugar House.
- Bulletin No. 104—Feeding Blackstrap Molasses to Young Calves.
- Bulletin No. 105—Diseases Affecting Rice in Louisiana.
- Bulletin No. 106—Cerebro-Spinal Meningitis of Horses.
- Bulletin No. 107—Preliminary Tests of Sugar House Machinery.
- Bulletin No. 108—A Preliminary Report on Some Diseases of Chickens.
- Bulletin No. 109—Experiments with Bacterium Anthracis, Anthrax Vaccines and Hyperimmunization.
- Bulletin No. 110—Comparison of Cotton Seed Meal and Hulls with Cold Pressed Cake as a Dairy Feed.
- Bulletin No. 111—Rotation Experiments in Cotton, Corn, Oats and Cow Peas.
- Bulletin No. 112—Orchard Report of Baton Rouge Station.
- Bulletin No. 113—Analyses of Commercial Fertilizers and Paris Green.
- Bulletin No. 114—Analyses of Commercial Feeding Stuffs.
- Circular on Anthrax or Charbon (by Dr. W. H. Dalrymple, M. R. C. V. S.).
- Bulletin No. 115—The Principles and Practice of Feeding, Including Our Available Stock Foods.
- Bulletin No. 116—A Preliminary Report on the Anthracnose or Pod Spot Disease of Beans.
- Bulletin No. 117—An Experimental Study of Bagasse and Bagasse Furnaces.
- Bulletin No. 118—Corn, with special reference to selecting, grading, preserving seed, preparing exhibits, rules and regulations for judging, etc.

Report of Analyses of Commercial Fertilizers for Season 1908-9.

Report of Analyses of Commercial Feed Stuffs for Season 1908-9.

Bulletin No. 119—Bean Anthracnose.

Bulletin No. 120—Some Sugar Cane Diseases.

Bulletin No. 121—The Sugar-Cane Mealy-Bug.

Bulletin No. 122—Rough Rice as Feed for Horses and Mules.

Bulletin No. 123—Some Grazing and Soiling Experiments.

Bulletin No. 124—Part I: Breeds of Hogs;

Part II: The Best Crop to Grow for Hogs,  
and Other Data.

Report of Analyses of Commercial Fertilizers for Season  
1909-10.

Report of Analyses of Commercial Feeding Stuffs for Season  
1909-10.

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